10/538325

Document made available under the Patent Cooperation Treaty (PCT)

International application number: PCT/US04/017205

International filing date: 01 June 2004 (01.06.2004)

Document type: Certified copy of priority document

Document details: Country/Office: US
Number: 60/473,930
Filing date: 29 May 2003 (29.05.2003)

Date of receipt at the International Bureau: 19 August 2004 (19.08.2004)

Remark: Priority document submitted or transmitted to the International Bureau in compliance with Rule 17.1(a) or (b)

World Intellectual Property Organization (WIPO) - Geneva, Switzerland
Organisation Mondiale de la Propriété Intellectuelle (OMPI) - Genève, Suisse

1204047

THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

UNITED STATES DEPARTMENT OF COMMERCE

United States Patent and Trademark Office

August 08, 2004

THIS IS TO CERTIFY THAT ANNEXED HERETO IS A TRUE COPY FROM THE RECORDS OF THE UNITED STATES PATENT AND TRADEMARK OFFICE OF THOSE PAPERS OF THE BELOW IDENTIFIED PATENT APPLICATION THAT MET THE REQUIREMENTS TO BE GRANTED A FILING DATE.

APPLICATION NUMBER: *60/473,930*
FILING DATE: *May 29, 2003*
RELATED PCT APPLICATION NUMBER: *PCT/US04/17205*

Certified by

Jon W Dudas

Acting Under Secretary of Commerce
for Intellectual Property
and Acting Director of the U.S.
Patent and Trademark Office

60473930.052903/PRV

Please type a plus sign (+) inside this box → [+]

PTO/SB/16 (8-00)
Approved for use through10/31/2002. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

jc806 U.S. PTO 05/29/03

PROVISIONAL APPLICATION FOR PATENT COVER SHEET

This is a request for filing a PROVISIONAL APPLICATION FOR PATENT under 37 CFR 1.53(c).

11002 U.S. PTO 60/473930 05/29/03

INVENTOR(S)		
Given Name (first and middle [if any])	Family Name or Surname	Residence (City and either State or Foreign Country)
Richard A.	BELANGER	Kensington, New Hampshire

☐ *Additional inventors are being named on the____ separately numbered sheets attached hereto*

TITLE OF THE INVENTION (280 characters max)

HOT MELT DISPENSER WITH SILICONE VALVE

Direct all correspondence to: **CORRESPONDENCE ADDRESS**

☒ Customer Number 022902 →

OR *Type Customer Number here*

Place Customer Number Bar Code Label here

☒ Firm or Individual Name	Conrad J. Clark				
Address	Clark & Brody				
Address	1750 K Street, NW, Suite 600				
City	Washington, DC	State		ZIP	20006
Country	USA	Telephone	202-835-1111	Fax	202-835-1755

ENCLOSED APPLICATION PARTS *(check all that apply)*

☒ Specification *Number of Pages* 4 ☐ CD(s), Number

☒ Drawing(s) *Number of Sheets* 1 ☐ Other (specify)

☐ Application Data Sheet. See 37 CFR 1.76

METHOD OF PAYMENT OF FILING FEES FOR THIS PROVISIONAL APPLICATION FOR PATENT *(check one)*

☒ Applicant claims small entity status. See 37 CFR 1.27.

☒ A check or money order is enclosed to cover the filing fees

☒ The Commissioner is hereby authorized to charge filing fees or credit any overpayment to Deposit Account Number 50-1088

☐ Payment by credit card. Form PTO-2038 is attached.

FILING FEE AMOUNT ($) $80.00

The invention was made by an agency of the United States Government or under a contract with an agency of the United States Government.

☒ No.

☐ Yes, the name of the U.S. Government agency and the Government contract number are: _____

Respectfully submitted,

SIGNATURE Conrad Clark

TYPED or PRINTED NAME Conrad J. Clark

TELEPHONE 202-835-1111

Date 05/29/2003

REGISTRATION NO. *(if appropriate)* 30,340

Docket Number: 70300-0103

USE ONLY FOR FILING A PROVISIONAL APPLICATION FOR PATENT

This collection of information is required by 37 CFR 1.51. The information is used by the public to file (and by the PTO to process) a provisional application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 8 hours to complete, including gathering, preparing, and submitting the complete provisional application to the PTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, Washington, D.C. 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Box Provisional Application, Assistant Commissioner for Patents, Washington, D.C.

P19SMALL/REV05

HOT MELT DISPENSER WITH SILICONE VALVE

TECHNICAL FIELD

[01] This invention relates to the art of dispensers for liquid or semi-liquid materials. In the preferred embodiment, the invention relates to a dispenser for hot melt materials including polyurethane.

BACKGROUND

[02] It is known to provide a dispenser for a semi-liquid material, such as uncured caulk in the form of a tube with a plunger that is urged along the tube to dispense the material. Such tubes are often provided with frangible closures that seal the tube before use and are broken in the first use. It is also known to provide hot melt adhesive dispensers with check valves, such as spring-loaded mechanical valves, which open in response to the pressure of the material during application and then close to prevent dripping of the melted material.

[03] The use of mechanical check valves has been limited to devices that will re-used because of the cost of the valves. It has not been economical to use mechanical check valves with the caulk-type applicators because the valves would be discarded along with the tube.

[04] It is known to use flap-style check valves having resilient flaps, but these are generally used with liquids and at low temperatures.

SUMMARY OF THE INVENTION

[05] In accordance with the invention, a tube-style dispenser designed to contain hot melt materials such as adhesives and hot melt polypropylene includes a valve that prevents dripping of the melted material when dispensing pressure is removed.

[06] The valve of the invention is preferably made of a substance that withstands higher temperatures, such as the temperatures used during the melting of hot melt materials. For

example, such materials are routinely raised to approximately 200°F to 300°F and even as high as 450°F. As well, the valve is preferably made of a substance to which the hot melt materials do not generally adhere. The preferred substance of the valve is silicone because it does not stick to hot melt adhesives and also withstands higher temperatures.

[07] The valve of the invention is preferably a disc that fits into a tube dispenser such that it engages and seats on a front wall of the tube and the interior wall of the tube without additional retaining means. This is accomplished at least partly by providing the valve with a relatively thick cylindrical marginal edge that cooperates with the cylindrical internal wall of the tube to retain the valve upright and in the operative position. The marginal edge is preferably flexible whereby the valve can be sized to engage the interior wall of the tube tightly and to remain in contact with the sidewall due to the resilience of the marginal edge.

[08] A portion of the front wall of the disc is shaped to cooperate with the front wall of the tube dispenser. For example, the front wall may be conical to cooperate with a generally conical front wall of the dispenser. The central region of the front of the disc is recessed adjacent the flaps to provide space for the valve to open.

[09] The rear of the valve includes an annular depression forming the marginal edge to provide flexibility in the edge.

BRIEF DESCRIPTION OF THE DRAWINGS

[10] Figure 1 is a rear view of a valve in accordance with the invention.

[11] Figure 2 is a side view of the valve of figure 1.

[12] Figure 3 is a front view of the valve of figure 1.

[13] Figure 4 is a partial cross section of a dispenser tube in accordance with the invention having the valve of figure 1 installed therein.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

[14] With reference to figures 1 through 3, a valve 2 in accordance with the invention is made of silicone and sized to fit in the forward part of a tube-type dispenser 4 as illustrated in figure 4. The valve 2 is preferably in the form of a circular disc to fit in a cylindrical tube 4. Of course, other peripheral shapes may be used depending on the configuration of the dispenser. The dimensions shown in the figures are preferred dimensions.

[15] It will be appreciated that the valve 2 includes a conical front wall 6 that is annular, and a central depression 10 formed by surface 8 being displaced from the front wall 6. The rear wall of the valve includes an annular depression 12, which lies between a marginal edge portion 14 and a rear surface 16. The portion of the valve between the front surface 8 and the rear surface 14 is provided with slits 18 to form flaps. In the embodiment shown, two perpendicular slits form four symmetrical triangular flaps as shown. Other shapes are possible. For example, if the slits are not perpendicular or intersect at different locations, the shapes of the flaps will vary.

[16] The configuration shown provide a relatively thick section 20 of the valve for forming the flaps. This provides increased resiliency for the flaps and ensures their closing upon release of dispensing forces in the heated material. The provision of the annular depression 12 also provides adequate resiliency to the marginal edge portion to ensure good contact with the interior of the tube.

[17] Use of silicone is advantageous because it provides a wide range of Durometer options and withstands temperatures up to about 450°F.

[18] Modifications within the scope of the appended claims will be apparent to those of skill in the art.

I claim:

A valve comprising a disc of silicone having a front wall with a central recess therein and a rear wall with an annular recess therein, wherein said annular recess forms a resilient marginal edge portion and a central portion of said disc formed between said central recess and said rear wall includes flaps for being opened during dispensing of material.

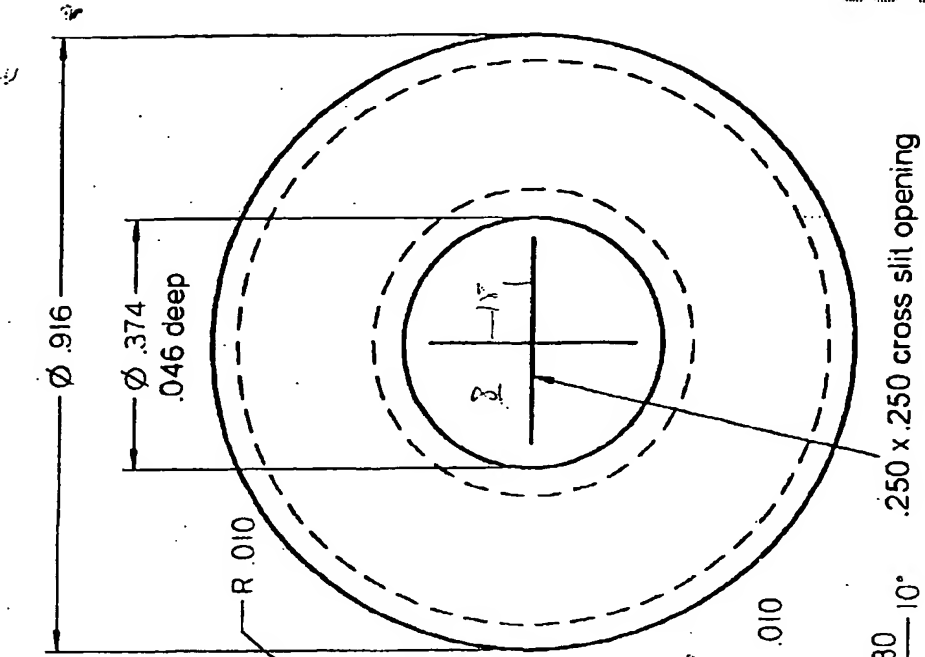

FIG. 3

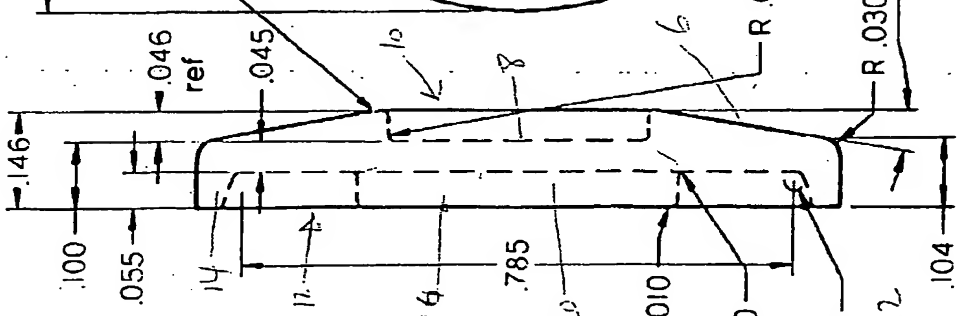

FIG. 2

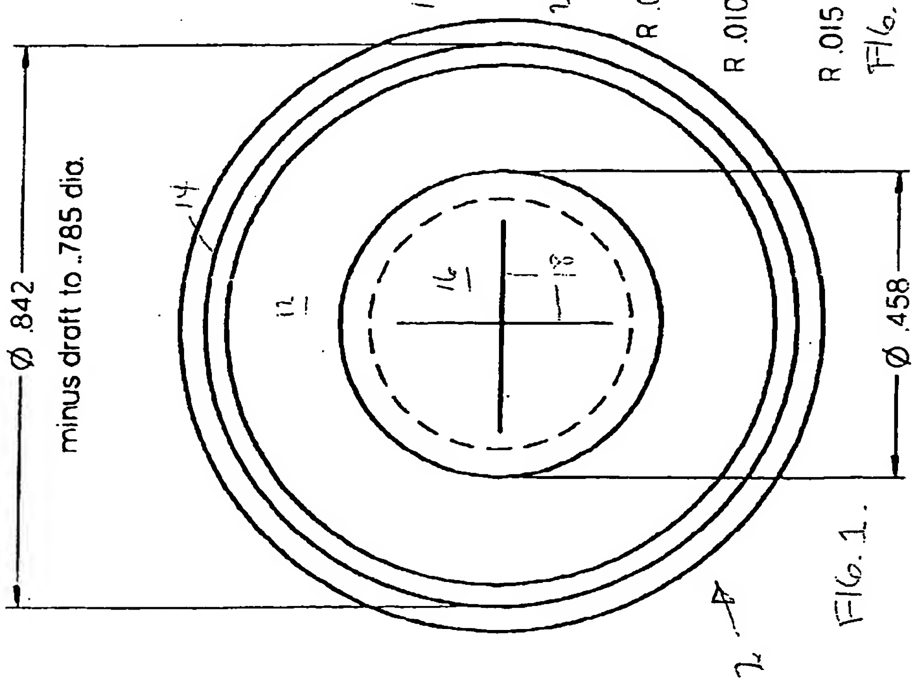

FIG. 1.

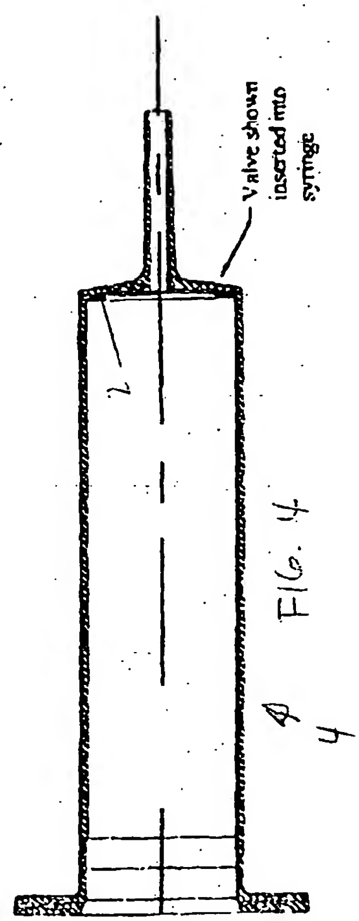

FIG. 4